



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,036	12/28/2001	Yoshiyuki Takizawa	1794-0146P	4262
2292	7590	11/21/2003	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			PRITCHETT, JOSHUA L	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 11/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/029,036

Applicant(s)

TAKIZAWA ET AL.

Examiner

Joshua L Pritchett

Art Unit

2872

Aw

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 7-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This action is in response to Amendment A filed October 12, 2003. Claim 1 has been amended as requested by the applicant.

#### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the non-constant periodic length of the layers in the multilayer film must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani in view of Sumida (US 5,303,256).

Regarding claim 1, Otani discloses a reflecting mirror (3) involving a surface part wherein different types of multilayer films (abstract lines 5-6) have been formed, respectively, in every regions of predetermined shapes (Fig. 1), and reflecting light rays (Fig. 2) which were input, by said surface part. Otani further discloses a detector (4) to which the light rays reflected by said surface part are input (Fig. 2) and which detects spectrally the light rays thus input. Otani lacks reference to the non-constant periodic length of the films. Sumida teaches the use of a wedge shaped layer in multilayer mirror (Fig. 1). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the wedge shaped design of Sumida in the Otani multilayer mirror for the purpose of changing the optical thickness of a region within the region.

Regarding claim 2, Otani teaches that the multilayer films reflect light in the X-ray spectrum (claim 1 line 1). Otani further teaches the layers of the multilayer films being made of nickel and carbon (abstract line 14). The applicant states that the multilayer films in the present invention are made of nickel and carbon (application page 15). It would therefore have been obvious, although perhaps not inherent; to have the multilayer films of Otani have total internal reflection in the visible spectrum because the multilayer films of Otani are comprised of the same material as the present invention. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani multilayer films have total internal

Art Unit: 2872

reflection of light in the visible spectrum for the purpose of using the telescope detector to observe only shorter wavelengths than visible light.

Claims 3/1, 3/2, 4/3/1 and 4/3/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani in view of Sumida as applied to claim 1 further in view of Thoe (US 5,027,377).

Regarding claims 3/1 and 3/2, Otani discloses the surface part involves which has been divided into a plurality of sector-shaped areas (Fig. 1) each having a predetermined central angle containing a central portion of the circular shape at its apex (Fig. 2). Fig. 2 shows that each of the small areas shown in Fig. 1 must have its own predetermined angle so as to cause the reflected light to converge onto detector (4). Otani lacks reference to the surface part being a circular shape. Thoe teaches a multilayer X-ray telescope (abstract lines 3-6) that has a surface part that is a circular shape (Fig. 5). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani reference have the circular shape taught by Thoe for the purpose of expanding the incident angle that will be received by the surface part.

Regarding claims 4/3/1 and 4/3/2, Otani discloses the surface part is composed of a plurality of sections each involving a predetermined number of said sector-shaped areas (Fig. 1) in which types of multilayer films formed therein and orders in alignment of the multilayer films coincide with each other in the plural sections (abstract lines 7-12). The abstract of Otani discloses the use of a plurality of multilayer film reflectors each having a prescribed dimension

Art Unit: 2872

on the whole of the surface part. Otani also discloses that the height of each small section is the same (abstract line 15-16), which would inherently mean that the regions align with one another.

Claims 7/1, 7/2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani in view of Sumida and Thoe as applied to claims 1-4 above, and further in view of Perryman (US 5,381,001).

Otani in combination with Thoe teaches the invention as claimed but lacks reference to the use of a super conducting tunnel junction detector. Perryman teaches the use of a super conducting tunnel junction detector (29) in a telescope (col. 17 lines 39-41). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the Otani reference detector be a super conducting tunnel junction detector as taught by Perryman for the purpose of detecting quasi-particles.

### *Response to Arguments*

Applicant requested a copy of the any English language material to which the examiner has access regarding Otani (JP 05-232297). The examiner is providing a copy of the English translation of Otani (JP 05-232297) attained on the Japanese Patent Office website.

Applicant's arguments filed October 12, 2003 have been fully considered but they are not persuasive.

Art Unit: 2872

On page 8 of Amendment A, applicant argues that Otani does not teach the non-constant periodic length. This claim limitation is not supported by the drawings (Figs. 3 and 7b) where periodic length is shown and therefore must be either added to the drawings or removed from the claim limitations. The examiner has also provided art to reject the newly added subject matter of the non-constant periodic length. The Sumida reference is used to show that it is known in the art and would be obvious to a person of ordinary skill in the art to have a non-constant periodic length in a multilayer reflecting film structure.

On page 9 of Amendment A, applicant argues that there is no teaching in Otani to reflect visible light. The combination of Otani and Sumida teaches all the claimed structural limitations of the current invention and therefore would be able to perform any claimed function of the current invention. The rejection is viewed a proper by the examiner.

On page 9 of Amendment A, applicant argues that claims 3-4 and 7-9 are allowable because claim 1 is allowable. The examiner as provided art to reject claim 1 and the newly added limitations of claim 1 do no appear in the drawings, therefore this argument is moot since claim 1 is not viewed as allowable by the examiner. Regarding claims 3-4 Thoe does teach a circular shaped X-ray reflector telescope in Fig. 5. Regarding claims 7-9 Perryman teaches the use of a super conducting tunnel junction detector in a telescope (col. 17 lines 39-41).

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Art Unit: 2872

Krausz (WO 200268999) teaches a wedge-shaped multilayer mirror.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua L Pritchett whose telephone number is 703-305-7917. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A Dunn can be reached on 703-305-0024. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



Application/Control Number: 10/029,036

Page 8

Art Unit: 2872

JLP

*JP*

A handwritten signature in black ink, appearing to read "Drew Dunn", with a stylized, sweeping flourish at the end.

DREW DUNN  
SUPERVISORY PATENT EXAMINER